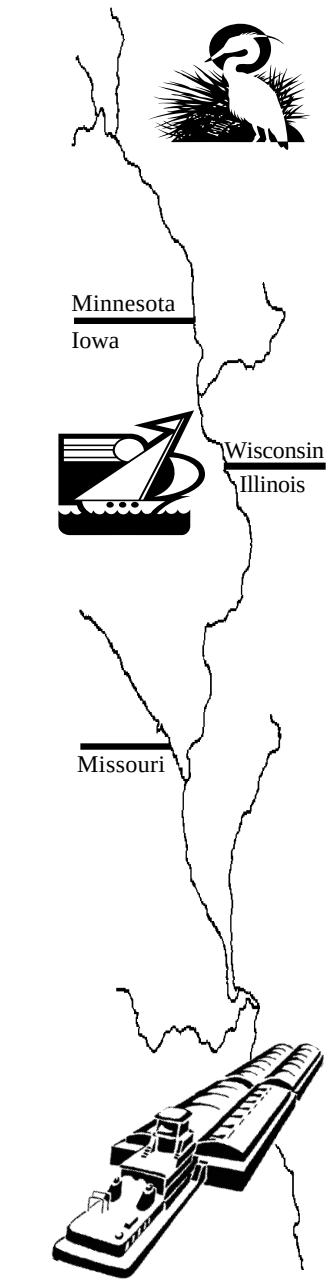
US Army Corps of Engineers

Upper Mississippi River - Illinois Waterway System Navigation Study

UMR-IWW System Navigation Study Newsletter | January 1999 | Vol. 6 No. 1



Navigation Study Resumes Public Interaction

Corps official calls for cooperation as study proceeds

Recent delays in the Navigation Study don't mean the study is "dead," George "Dusty" Rhodes said in a recent speech. They mean the study team is seeking a firm basis for recommendations that will affect the Upper Mississippi River and Illinois Waterway for decades to come, said Rhodes, chief of program execution for the Mississippi Valley Division.

The release of preliminary study findings was put on hold for about six months while experts completed a quality control check of the study's economic models and the results the study team was getting from them. The review found the models were technically accurate but left the study team with lingering concerns about the information being used in the models, Rhodes said at the Nov. 18 meeting of the Governors' Liaison Committee.

"We decided it was appropriate to step back, complete our technical reviews and develop information for several options before engaging the public" - Dusty Rhodes

The study has several possible outcomes, and which one is chosen depends greatly on what input data are used, he said. Several people have disagreed on what that information should be, and the study is too critical to ignore the differences in opinion, he said. Therefore, the Navigation Study team is continuing to gather information and coordinate efforts with Corps headquarters in Washington D.C., he said.

"The Mississippi River's future is too important to disregard any credible possibilities," he said. "Some have suggested that we engage additional experts in the review process. We welcome all such participation for we are at a critical milestone in the study's development.''

Rhodes spoke frankly and strongly in his presentation, saying there have been many misleading statements made in public forums about the reason for delays and preliminary study findings.

"We were charged with cooking the books to make the answers come out in favor of large-scale (new lock construction) improvements," he said. "I say to you categorically that this is not the case."

Preliminary information shared several months ago represented only a portion of the range of options that needs to be considered, he said. The decision to slow

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ECONOMIC MODEL CONSIDERATIONS ARE A KEY

Sophisticated model is expected to give the study team more precise answers, but it also requires collection of more detailed data.

As congestion at busy locks drives up the cost of hauling goods by barge, the economic decisions that shippers make could be more complicated – and varied – than assumed in previous Corps of Engineers studies.

That realization is a key factor behind the delay in the Navigation Study's determination of the National Economic Development Plan, or the combination of improvements that maximizes net economic benefits consistent with protecting the nation's environment.

The study was basically put on hold this summer for a technical review of the models. Preliminary results raised concerns for study officials because they varied significantly from the outputs of traditional Corps models, study officials said.

Experts who conducted the "quality control" check found the model was sound. However, the model outputs can be extremely sensitive to the economic assumptions being used – particularly to the concept of elasticity, or the impact of a price change on demand for river transportation, said Rich Manguno, a New Orleans District economist now heading the study's economic evaluation.

If shippers keep moving goods on the river despite a price increase, the product is considered to be inelastic, while a product would be elastic if shippers sent their product to alternative markets given even a small increase in the cost of river transportation.

Some have accused the Corps of delaying the study to develop a recommendation that favors construction of new locks and dams. In fact, many of the economic assumptions examined with the new model make construction appear to be a less favorable alternative than it would be using traditional Corps models, Manguno said.

If you assume that demand for river transportation is totally inelastic – the assumption made in previous studies – then navigation improvements like lock construction are economically justified more quickly than they would be assuming more elasticity or responsiveness to price, he said.

Over the next month, a private contractor will be compiling actual data to help determine the relative elasticity of various commodities that are carried on the Mississippi, including grain, coal, petroleum, industrial chemicals, iron and steel. The contractor's efforts will ultimately allow the study to estimate how much of a given commodity is shipped via the waterway at a given price. At the November meeting of the Governors' Liaison Committee, the study team also appealed to representatives of the five study states for information.

"What we're after is, as congestion starts to build on the waterway, what kind of response can we expect in the shipments of corn and other commodities relative to the increase in price they face," Manguno said.

In previous Corps of Engineers studies, economists assumed all traffic would remain on the river until it could be shipped to the same point more cheaply through another means, like rail, he said.

"Now we're saying that, especially with grain, it's wrong to assume that the only other option is to put it on rail and ship it to New Orleans. What we're saying is there are other things that come into the picture as well. They could ship it to a feedlot, or crush it and turn it into corn oil or another product. The seller of the grain is not interested in where it

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Gotta have milk?

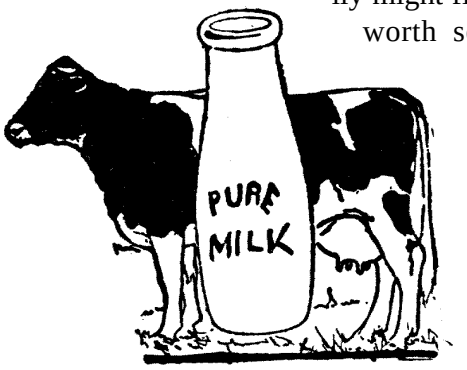
Consumer behavior helps explain elasticity of demand, a key component in the Navigation Study's economic models.

If your 6-year-old wanted a Furby (this year's hottest toy) under the Christmas tree – and you'd pay just about anything to see the smile on her face – economists would call your demand for the item inelastic. There aren't a lot of substitutes for a furry creature that speaks "Furbish," and there aren't many to be found; therefore, the price could inch up quite a bit on an Internet auction site before you'd opt instead for a "Tickle Me Elmo".

On the other hand, if you're willing to trade in your Kraft salad dressing for a rival brand as soon as the price inches up a few cents, demand for that item would be elastic. Think in terms of flexibility. You're willing to change your behavior given even a small change in price when the alternatives are numerous, convenient and similar.

Elasticity can vary for a given item, or means of transportation, depending upon the circumstances, however. Milk is likely to be an inelastic item for a parent with small children, but it could be a relative elastic purchase for an adult willing to drink tea with his cookies and seek out a cheaper source of calcium as milk prices rise, says Paul Soyke, chief of the Economic and Social Analysis Branch at the Rock Island District, Corps of Engineers.

Convenience is one factor that influences elasticity, Soyke said. Whereas one family might balk at paying a higher price for the convenience of pre-cooked meals, a busy, dual-income family might find the speed worth several extra dollars.



Similarly, experts consulted by the Corps of Engineers made it clear price isn't the only consideration when it comes to demand for water transportation. Some shippers are willing to pay extra for convenience, adding another complication to an already difficult economic calculation. Just as people often are willing to pay high prices at a gasoline station conveniently located on the way to work, grain transporters located closest to a river terminal location may be willing to stick with water transportation as the price of that water transportation goes up longer than would others in a location farther from the river.

And like any consumer, people shipping goods down the river look at how much they can afford. What percentage of their income is represented by the higher price? Is it significant or not? The concepts being analyzed in the study have many parallels to the neighborhood grocery, Soyke said.

"It's like taking the 100 people who go into a grocery and plotting each one of their demands," he said. "Everybody has a different set of priorities, and they change."◆

PUBLIC INTERACTION RESUMES

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the study to re-evaluate study models that have never before been used was a sign of courageous leadership by Major General Phillip R. Anderson, Rhodes said.

"Even though we received criticism, we decided it was appropriate to step back, complete our technical reviews and develop information for several options before engaging the public. I want to assure you that we are not trying to keep anything secret.'

Some study data and models now are available for review by the general public, he said. Public meetings also are expected to be held in the summer. New meeting dates, as well as the description of the likely format for the meetings, will be announced in coming months.

Meanwhile, the current phase of the study is the most critical, Rhodes said, and will depend upon cooperation between the Corps and everyone else with a stake in the Upper Mississippi River or Illinois Waterway.

"If we are to jointly develop a visionary plan that puts in place a balanced approach for the river's future," he said, "it will be established through collaboration, not confrontation." ◆

ECONOMIC MODEL

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goes. What he's really interested in is maximizing what he can get for it. We're trying to get to the nature of the willingness of an individual to pay for water transportation."

In August, the Corps held an expert elicitation meeting, bringing together four of the nation's top experts on grain transportation to glean more information on the demand issue. Their conclusion, meeting facilitator Paul Soyke said, was that the Corps needed more data, and that is what has prompted the additional research effort. Some of what they did suggest, however, was:

- Elasticity is to some degree a function of geography. The closer to the river, the more advantage there is to putting goods on the river, and therefore the more inelastic, or inflexible the decision.
- Grain is relatively elastic, given its many alternative markets.
- Events in the future could have a significant impact on the shape of the model's demand curves, and the assumptions made in the model requires an understanding of a variety of world markets and conditions.

Information gained from the contractor, study states and other experts will help the Corps determine the most accurate set of economic assumptions to use in developing a preferred improvement plan. The model has been run given a variety of scenarios, and answers have varied dramatically, Manguno said.

If you assume demand is totally inelastic, as the Corps has done historically, the preliminary analysis indicates construction of new locks to be justified immediately. If you assume somewhat more elastic demand, coupled with projections of traffic near the high end of the Corps forecasts, then the economic justification of locks is pushed out 20 years or more – and even further assuming greater levels of elasticity or lower traffic levels.

Manguno cautions against making any study conclusions before the correct economic assumptions are determined, though. Environmental costs, not yet determined for the system, also could be a major factor in the economic equation. "I'm unwilling to say we know everything with certainty," he said. "I don't think we do yet."◆

BANK EROSION STUDY COMPLETED

Flood impacts from the Great Flood of 1993 were identified as the dominant erosion mechanism observed during the Bank Erosion Study conducted by the Navigation Study's Environmental Work Group. Commercial navigation was identified as one of several contributing factors to the erosion of about one-fifth of 49 erosion sites sampled on the Upper Mississippi River and one-fourth of the 23 erosion sites examined on the Illinois Waterway, according to the study results.

The results of a broad survey of eroding riverbanks were reported in our January 1997 newsletter. The second phase, completed in August 1998, looked at the relative role of commercial navigation on system-wide bank erosion.

The study team concluded that 14 percent of the banks of the Upper Mississippi River are actively eroding, said Kevin Landwehr, a hydraulic engineer who worked on the study. Waves generated

by tows passing by the bank or mooring along the shoreline were determined to be one potential cause of bank erosion, he said. Flooding, wind generated waves, seepage and piping, recreational boating, and the annual freeze and thaw also were observed erosion mechanisms, he said.

The erosion study identified areas along both rivers that were similar to the sites studied in the "survey" portion, then extrapolated where navigation induced erosion may be occurring throughout the system. The sites are primarily located in narrow channel sections, fleeting areas and temporary mooring facilities. The sites were identified, then overlaid with maps indicating potential areas of concern from eagle roosting areas to bridges to archeological sites.

"One of the main conclusions of the field survey report was that, of all the mechanisms observed, the flood of 1993 had the most significant impact on what the study team observed," Landwehr said. "However, that doesn't mean that in site-specific areas, commercial navigation could not be a contributing factor. It was clearly not the dominant mechanism on a system-wide basis."

As part of its system-wide environmental impact analysis, the study will identify environmentally significant areas that may potentially be harmed by navigation.◆

ADDITIONAL NAVIGATION STUDY REPORTS AVAILABLE:

The March 1998 newsletter contained a sheet with a list of Upper Mississippi River – Illinois Waterway System Navigation Study documents available to the public. The following Interim Reports for the Navigation Study are also now available:

❒	ENV Report 1 – Flume Study Investigation of the Direct Impacts of Navigation-Generated Waves on Submersed Aquatic Macrophytes in the Upper Mississippi River	$5.00
❒	ENV Report 2 – Rates of Net Fine Sediment Accumulation in Selected Backwater Types of Pool 8, Upper Mississippi River	$5.00
❒	ENV Report 3 – Physical Forces Study, Kampsville, Illinois Waterway	$12.00
❒	ENV Report 4 – Prediction of Vessel-Generated Waves with Reference to Vessels Common to the Upper Mississippi River System	$5.00
❒	ENV Report 5 – Physical Forces Study, Clark's Ferry, Mississippi River	$15.00
❒	ENV Report 6 – Upper Mississippi River Navigation and Sedimentation Field Data Collection Summary Report	$11.00
❒	ENV Report 7 – Site-Specific Habitat Assessment	$9.00
❒	ENV Reports 1-5 (copied onto a single Compact Disc (CD))	$10.00
❒	Detailed Assessment of Small Scale Measures	$25.00

If you are interested in purchasing one or more of these documents and/or the CD, please indicate so by checking the appropriate box(es) and sending this page (or a copy of this page) and a check for the total amount payable to ***FAO, USAED, Rock Island*** *to the following address:*

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning, Programs, and Project Management Division (Simmons)
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P.O. Box 2004
Rock Island, Illinois 61204-2004

Many reports also are available for viewing on the Internet at the following address:
http://www.mvr.usace.army.mil/pdw/nav_study.htm

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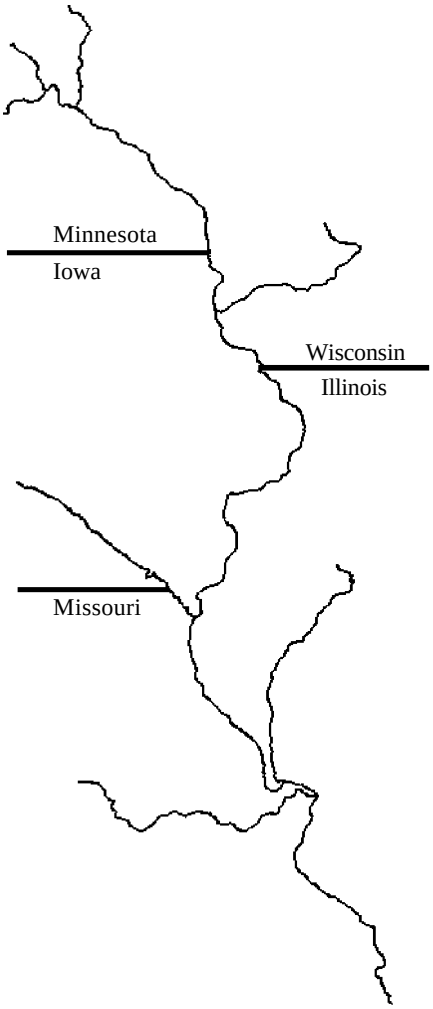

US Army Corps of Engineers

January 1999

UPPER MISSISSIPPI RIVER - ILLINOIS WATERWAY SYSTEM NAVIGATION STUDY
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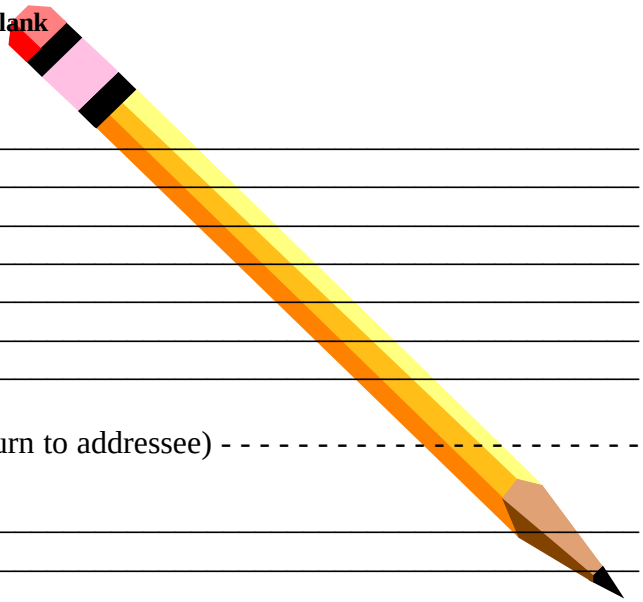

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Small-Scale Measures Refined

The March 1998 newsletter identified and discussed eight small-scale measures for improvement on the system. However, further analysis of the measures has led to the continued consideration of the following five: guidewall extensions with powered kevels; switchboats with guidewall extensions; congestion tolls and lockage time charges; mooring facilities; and approach channel improvements.

These changes were based on additional information received from the navigation industry, U.S. Department of Transportation Maritime Administration, U.S. Coast Guard and Corps of Engineers staff members.

The five measures, all of a smaller scope than the construction of a new lock or extension of the existing lock, will be incorporated into the systemwide analysis for use in development of alternative plans. They will join the remaining large-scale or new lock construction measures in the evaluation and comparison of costs, benefits and impacts.

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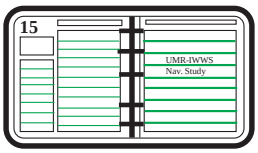

Upcoming Meetings

Governors' Liaison Committee

Feb. 16, 1999 — 1 p.m. - 4 p.m.
St. Louis Airport Hilton
St. Louis, MO

May 17-18, 1999 — Meeting times to be announced
Holiday Inn Select Airport Hotel
Minneapolis, MN

Economics Coordinating Committee

Week of May 2, 1999 — Date, time and place to be announced
Chicago, IL

Navigation Environmental Coordination Committee

May 4-5, 1999 — Meeting times to be announced
Holiday Inn
Moline, IL

Check 1-800-872-8822 for final meeting times and locations.

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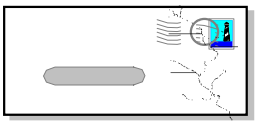

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New information leading to revisions in the small-scale measures under consideration included:

- Reclassification of industry self-help, helper boats and powered ratchets -- all identified as promising ways to reduce river congestion -- as "without project" measures. They are used to varying degrees now and could continue without further Congressional approval or any recommendations resulting from the study.
- Verification that helper boats (800-1,200 horsepower) have insufficient power to safely pull cuts of barges under all flow conditions and that larger, more costly switchboats (1,800-2,400 horsepower) should be used instead.
- Determination that permanent guidewall extensions could be built on the Upper Mississippi River without significant impacts to navigation and therefore are recommended instead of spud barge extensions for added safety and reliability.
- Clarification that industry self-help (requiring tows to help each other) should be limited to periods of large delays only as is currently done.
- Identification that significant time savings are possible if additional personnel are provided with powered kevels and guidewall extensions.◆

Questions?

❍ For general study information, call Gary Loss, project manager, at 309/794-5355 or write to the address below, ATTN: CEMVR-PM-P or visit our home page at:
http://www.mvr.usace.army.mil/pdw/nav_study.htm

❍ For information on Public Involvement meetings, call the toll-free telephone number, 800/USA(872)-8822. Meeting announcements will be in the Public Involvement menu. Or call Kevin Bluhm, public involvement coordinator, at 651/290-5247, or write to the address below, ATTN: CEMVR-PM-A.

❍ To be added to the mailing list for future newsletters, study updates, and meeting announcements, write to the address below, ATTN: CEMVR-PM-A, or call the toll-free telephone number and leave your information in the Public Involvement menu.

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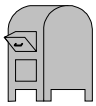

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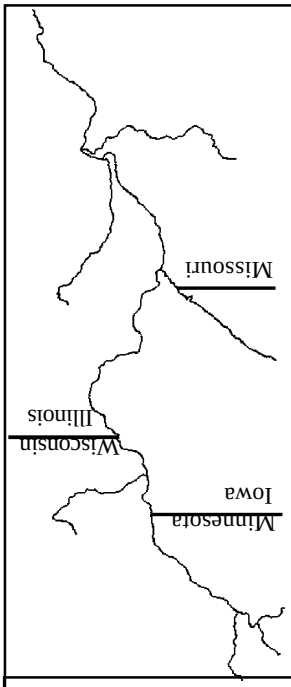

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